

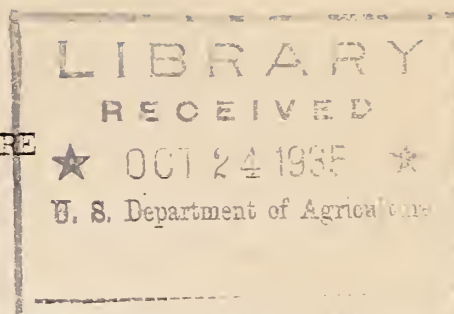
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UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF HOME ECONOMICS  
WASHINGTON, D.C.



COMMERCIAL MANUFACTURE OF A SUGGESTED SCHOOL LUNCH BREAD

As a means of increasing the nutritive value of school lunches the Bureau of Home Economics has suggested the use of dried skim milk in the bread used for sandwiches. A very desirable loaf can be made using as much as 12 percent dried milk solids. This loaf has been designated the school lunch loaf. It adds calcium, protein, and vitamin C to the children's lunch at very little extra cost.

The following directions are suggested as the main points of difference between the formulas for ordinary white bread and for the suggested school lunch loaf:

1. Use a large percentage of sponge.
2. Use 7 or 8 percent sugar.
3. Use diastatic malt, usually about 1/2 of one percent of diastatic malt, in the sponge. If additional malt is needed it should be added at the dough stage.
4. The dough should be mixed out slacker than for ordinary dough.
5. The mixing and floor time should be increased slightly.
6. The baking temperature should be reduced about 10°F. from regular baking temperatures.
7. Use only highest quality of milk solids of proved baking quality.

The school lunch loaf is not difficult to make, but the addition of 12 percent fat-free milk solids necessitates some modification in the methods of processing the dough as compared with doughs containing little or no milk. The dried skim milk increases the amount of proteins in the fermenting dough, and the resulting protein system seems to be stronger than if no milk is used. Besides this, the added milk makes the dough less acid than dough containing no milk.

Since high-protein doughs are considerably less acid than others, a greater amount of sponge is carried over into the dough stage to introduce more acid. The mistake should not be made, however, of overfermenting the sponge in order to secure this acidity. The sponge should not be over-aged, or fermented to the point of partial degradation, or undesirable flavors will result. Sixty-five to 80 percent of the total flour should be used in the sponge and the sponge set cool. A little more yeast should be used than in the usual formula.

The introduction of a high percentage of milk-solids also probably has a slight depressing effect upon the enzymatic activity in the dough. Thus the sugar-producing enzymes as well as the gluten-mellowing enzymes are slightly retarded in their normal function. For this reason it is desirable to introduce diastatic malt or some other desirable enzyme-carrying medium. Too much diastatic malt should not be used in the sponges. If additional diastatic activity is desired or required the additional amount of malt should be added at the dough stage. Usually not more than 1/2 percent of diastatic malt is recommended for the sponge.

Another peculiarity of the high-protein dough is the amount of sugar required. With too little sugar the bread flavor is not so satisfactory. With as much as 7 or 8 percent of sugar there is an improvement in both the flavor and taste of the bread.

This bread requires a longer baking period than other breads. Oven temperatures must be regulated to avoid too brown a crust. Usually about 10°F. lower than regular baking temperatures is sufficient.

Because of the large percentage of milk in this bread it is important to have dried skim milk of the highest quality. Good results cannot be obtained with an off-grade product.